DOCUMENT RESUME

ED 152 281 IR 005 746

AUTHOR Karabinus, Robert A.; Nord, Sara B.
TITLE Evaluation of Individualized Instruction in Educational Statistics.
PUB DATE 13 May 77
NOTE 18p.; Paper presented at the Illinois Educational Research Association (Chicago, Illinois, May 13, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Achievement; *Educational Assessment; *Evaluation Methods; Higher Education; *Individual Differences; *Individualized Instruction; Self Concept; Sex Differences; Statistics; *Student Attitudes

ABSTRACT

Three research questions were addressed: Is there a positive relationship between student views on the evaluation procedures being fair, and other variables, e.g., sex, achievement, and self-concept? Is there a positive relationship between student views on the evaluation procedures enhancing learning, and other variables, e.g., sex, achievement, and self-concept? Are there other significant relationships between student attitude, achievement, and self-concept that might suggest ways in which both the evaluation and learning experiences might be changed? Subjects were 101 graduate students in three educational statistics classes. Two classes were pretested on the main concepts of the course. All classes were posttested (final exam) and, after grades were determined and communicated to the students, attitude and self-concept instruments were completed by the students. Attitude factors were identified as: (1) non-anxiety producing, (2) challenging and stimulating, (3) fairness of testing and evaluation procedures, (4) pleasant learning experience, and (5) evaluation procedures that encourage learning. Self-concept factors were described as: (1) self-confidence and enjoyment in academic settings, (2) preference toward non-teacher structured study and activity, (3) efficiency of planning own study schedule, (4) preference toward independent study and discussion groups, and (5) satisfaction of one's own academic performance. Significant relations were found between: (1) attitude #3 and posttest female achievement/pretest achievement/self-concept #3, #5; (2) attitude #5 and posttest achievement/self-concept #4; (3) attitude #1 and posttest achievement; and (4) achievement scores and attitudes #1, #2, #4/self-concept #1. The authors concluded that self-concept was an important variable. (DAG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED152281

EVALUATION OF INDIVIDUALIZED INSTRUCTION IN EDUCATIONAL STATISTICS

by

Robert A. Karabinus

and

Sara B. Nord

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Robert A. Karabinus

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

SYMPOSIUM ON EDUCATION

Illinois Educational Research Assoc. - Special Interest Group
First Annual Meeting, Friday, May 13, 1977.

Northern Illinois Association for Educational Research, Evaluation, and Development
820 North Michigan Avenue, Chicago, IL 60611

IR005746

Evaluation of Individualized Instruction in Educational Statistics

by

Robert A. Karabinus
Northern Illinois University

Sara B. Nord
Henry-Stark Counties
Special Educational Cooperative

Introduction:

Using strictly individualized instructional materials and techniques in a college level course precludes the possibility of using norm-referenced measurement approaches. When students are permitted to complete a course in two weeks or anytime within a seven month period, tests are not given to groups of students at the same time. They are given individually when each student is ready. Therefore, mastery tests developed from the objectives stated in each module of the course materials are generally used for both formative and summative evaluation. The mastery learning environment, using untimed and open book reviews and tests allowing for repeats using parallel tests without a grade penalty if unsuccessful the first time, was instituted for the course in educational statistics involved in this study.

For this course in educational statistics, the materials were arranged in modular fashion with progress checks and reviews at the end of each module to aid the student in both learning and assessing his learning of the material. At the completion of each unit of study, usually comprising from two to four modules, unit tests were administered by the instructors. These were all open book and untimed, and feedback was immediate on the completion of these tests. All tests were marked passed or not passed according to an established criteria: 90% for A, 80% for B, 70% for C, etc. Knowing that the frequency of unit tests (about one each week in a regular term) would probably keep anxiety levels high, we emphasized the learning aspects of these tests and the fact that no penalty was

attached to not passing other than the time to restudy and retake the tests.

While these formative evaluations were the daily concerns of both students and instructors, there were two summative measures taken, a mid-term covering the first part of the course, and a final covering the last part. The same approach to taking and scoring these tests was used as indicated above with the formative evaluations. The usual kinds of problems about grade determination were anticipated, e.g., why should one no-pass score prevent a person from earning an A; why should not effort and time be considered in the final grade also to balance out some no-pass test scores? In general the rather complete approach to mastery learning and evaluation used in this course was somewhat difficult for many students to adapt to considering their conditioning for over 20 years in norm referenced settings.

The evaluation techniques used in this individualized course in educational statistics were examined primarily by analyzing student input and student characteristics. How did the students feel about the evaluation techniques being used, and did these feelings differ according to the sex, achievement levels, and/or self-confidence of the students. A second concern was with the method of instruction actually being an aid to learning. Did individualization enhance learning for all students, or only for some students? If the latter, could any student characteristics be identified that would differentiate attitude and behaviors?

Background to the Study:

An earlier study by the secondary author (Nord, 1974) indicated that individualized instruction in a graduate level educational statistics course resulted in a least equal achievement when compared with the traditional lecture-discussion method. These results also indicated that:

1. achievement and low anxiety were significantly and positively related under both methods of instruction;

2. individualized students showed a positive relationship between achievement and their evaluation of the course while the relationship was negative in the traditional class; and

3. males expressed less anxiety than did females and the traditional students less anxiety than the individualized students.

These results were supported by previous research (Webb, 1972), which demonstrated that negative attitude toward the subject matter had a detrimental effect on achievement. Sex differences in attitudes and/or achievement were noted by others (Aiken, 1970, 1972; Backman, 1972; Neale, 1969), all of which indicated a growing interest in the affective factors and personality variables that influence performance in statistics and/or mathematics.

The finding that anxiety was lower in the traditional class, especially in the female comparison, was contrary to the authors' expectations, in view of the advantages of individualized learning, such as criterion referenced testing, formative evaluation, flexible scheduling, etc. The male-female differences were possibly due to stereotyping differences, but the fact that lower anxiety in the traditional class occurred without regard to sex, indicated that other explanations were to be sought. Procedural changes aimed at anxiety reduction were introduced in the classes. The authors also felt that other personality variables might have been affecting achievement and/or attitude, specifically the student's estimation of himself as a student and his ability to learn individually. The authors agreed with Bernstein (1964) that self-image does affect performance. Therefore, in the spring, summer, and fall of 1974, the authors introduced a self-concept measure in the statistics classes and conducted this study.

Research Questions:

1. Is there a positive relationship between student views on the evaluation procedures being fair, and other variables, e.g., sex, achievement, and self-concept?

2. Is there a positive relationship between student views on the evaluation procedures enhancing learning, and other variables, e.g., sex, achievement, and self-concept?

3. Are there other significant relationships between student attitude, achievement, and self-concept that might suggest ways in which both the evaluation and learning experiences might be changed?

Sample:

101 Northern Illinois University graduate students taking Education 508, Educational Statistics, under individualized instruction during 3 terms: spring, summer, and fall, 1974.

Variables and Instrumentation:

1. Pretest achievement in educational statistics was measured by a 30-item multiple-choice instrument developed by the authors. It covered the main concepts of descriptive statistics, correlation and prediction, probability, hypothesis testing, and the typical binomial, z, t, and X^2 inferential tests. Since one class was not given the pretest, the number was reduced to 77. The KR21 reliability for this group of 77 was .538. This rather low reliability was expected when guessing was prevalent and the range limited (6-24) with a significant positive skew. The mean was 12.74.

2. Posttest achievement in educational statistics was measured by a 45-item comprehensive final examination developed by the authors. Content covered the same as the pretest. Process levels were mostly at the understanding, application, and analysis levels of Bloom's taxonomy. The KR21 for this sample was .786, which is low for a norm referenced test but probably quite high for a mastery or criterion referenced test that was significantly negatively skewed.

3. Attitude toward the learning experience in educational statistics was measured by a 20-item semantic differential instrument developed by the authors. (See attached form.) The instrument was designed to have 3 main factors: challenging and stimulating, non-anxiety producing and fairness of testing and evaluation procedures. For the present sample, however, 5 independent factors were identified using Principal Axis and Varimax rotation techniques that explained 62.5% of the total variance in the instrument, with item communalities ranging from .128 to .948. These 5 factors were described as follows:

   I. Non-anxiety producing
   II. Challenging and stimulating
   III. Fairness of testing and evaluation procedures
   IV. Pleasant learning experience
   V. Evaluation procedures that encourage learning

NIU

These 5 factors, if reduced to 3, would have explained only 51% of the variance in the total instrument, and this was not felt to be sufficient to represent the variable fairly. Factor scores (z) were generated for each of the five factors.

4. Self-concept of academic prowess and learning style was measured by an 18-item Likert scale developed by the authors. (See attached form). The instrument was designed to have 2 main factors: general self-confidence in academic settings, and preference toward self-directed study. For the present sample, however, 5 independent factors were identified using Principal Axis and Varimax rotation techniques that explained 57% of the total variance, with communalities ranging from .302 to .741. These 5 factors were described as follows:

   I. General self-confidence and enjoyment in academic settings
   II. Preference toward non-teacher structured study and classroom activity
   III. Efficiency of planning own study schedule
   IV. Preference toward independent study and small discussion groups
   V. Satisfaction of one's own academic performance

   These 5 factors, if reduced to 2, would have explained only 32% of the variance in the total instrument, and this was not felt to be sufficient to represent the variable fairly. Factor scores (z) were generated for each of the five factors.

Procedures:

The pretest was administered the first day of class prior to any instruction, except for the one class mentioned above that did not take a pretest. When students finished the required units and modules in the course, they were given the open-book final examination (posttest). Though some students chose to take a second test to raise their mastery level for a higher grade, the scores on the first instrument were those used in this study. After grades were determined and communicated to the students, the attitude and self-concept instruments were completed by the students.

Results:

Table 1 below shows the overall correlation coefficients between all possible pairs of the posttest achievement, attitude and self-concept variables used in this study. For research question #1, the relationships of the attitude factor

identified as Attitude III, Fairness of testing and evaluation procedures, with the other variables were examined first.

1. Though the overall correlation between posttest achievement and Attitude III was not significant, the correlation for females only (n=53) was significant at the .01 level (r=.344).

2. Students who scored above the mean on the pretest had a significantly higher mean on Attitude III than did those who scored below the mean on the pretest:

   Above pretest mean (n=33): .1766
   Below pretest mean (n=44):-.3135 $t = -2.44$ $p = .017$

3. The overall positive correlation between Self-concept V, Satisfaction of one's own academic performance, with Attitude III was highly significant: $r=.273$ $p < .01$.

4. Though the overall correlation between Self-concept III, Efficiency of planning own study schedule, and Attitude III was not significant, the correlation between these variables was significant for those who scored above the mean on the pretest: $r=.328$ $(n=33)$ $p < .10$.

TABLE 1

Correlations of Posttest Achievement, Attitude, and Self-Concept Variables

Total Sample (n = 101):

	Posttest	Att. I	Att. II	Att. III	Att. IV	Att. V
Posttest		.284**	.175*	.160	.320**	.140
SC I	.182*	.035	.145	.105	.062	-.006
SC II	.099	.004	.183*	.061	.093	.054
SC III	-.066	.100	.091	.119	.102	.022
SC IV	.110	-.120	.124	-.030	.301**	.154
SC V	.052	-.002	.153	.273**	-.014	-.051

** $p < .01$ (2-tailed) * $p < .10$ (2-tailed)

For research question #2, the relationships of the attitude factor identified as Attitude V, Evaluation Procedure that Encourage Learning, with the other variables were examined.

1. Though the overall correlation between posttest achievement and Attitude V was insignificant, as was the correlation between the same variables for males and females separately, the correlation between these variables for those who scored below the mean on the pretest was significant: r=.302 (n=44) p=.05.

2. While the correlation of Self-Concept IV, Preference toward independent study and small discussion groups, with Attitude V was not significant, the correlation between these variables for those who scored below the mean on the pretest was significant: r=.261 (n=44) $p < .10$.

For research question #3, there were several interesting relationships found among the different attitude and self-concept components and achievement:

A. Attitude I, Non-anxiety producing.

1. The overall correlation between posttest achievement and Attitude I, was highly significant: r=.284, $p < .01$.

   a. The correlation between these same variables for females only was also highly significant: r=.419 (n=53) $p < .01$
   b. The correlation for females only was significantly higher than that for males, p=.05
   c. The correlation for those who scored below the mean on the pretest was also significant: r=.304 (n=44) p=.05

2. The correlation of Attitude I and Self-Concept I, General self-confidence and enjoyment in academic settings, was negative for those who scored above the mean on the pretest, and positive for those who scored below the mean on the pretest: -.294 and .276 respectively. The difference between these two correlations was significant at the .01 level.

3. The mean for males on Attitude I was significantly higher than the mean for females: .235 and -.182 respectively. t=2.23, p=.028.

4. The mean on Attitude I for those scoring above the mean on the pretest was significantly higher than the mean for those scoring below the pretest mean: .3633(n=33), and -.3613(n=44), respectively, t=-.349, $p < .001$.

B. Attitude II, Challenging and Stimulating.

1. The overall correlation between posttest achievement and Attitude II was significant at the .10 level (see table 1).

   a. For males only, this correlation was highly significant: r=.478(n=48) $p < .01$
   b. The correlation for males was significantly higher than the correlation for females: r=.045(n=53), significance of difference = .05.
   c. For those who scored above the mean on the pretest the correlation was also significant: r=.436(n=33) $p < .02$

2. Though the overall correlation between Attitude 2 and Self-concept I,

General self-confidence and enjoyment in academic settings, was not significant, the correlation for males only was: r=.478 (n=48), p < .01.

a. That correlation coefficient for males was also significantly different from the negative correlation for females (r=-.162) at the .01 level.
b. That correlation for those scoring above the mean on the pretest was also significant: r=.307 (n=33) p < .10

3. The overall correlation of Attitude 2 with Self-concept 2, Preference toward non-teacher structured study, was significant. See table 1: r=.183 (n=101) p < .10. For females only, the significance was even higher: r=.284 (n=53), p < .050.

4. The correlation of Attitude II with Self-concept III, Efficiency of planning own study schedule, for males only was significant: r=.258 (n=48), p < .10.

   For those scoring above the mean on the pretest, the correlation was significantly different from the correlation for those scoring below the mean on the pretest: .332 (n=33) and -.318 (n=44), respectively, p=.01.

5. The correlation of Attitude II with Self-concept V, Satisfaction of one's own academic performance, was significant for those who scored below the mean on the pretest: .333 (n=44), p <.05.

6. The mean of Attitude II for those scoring below the mean on the pretest was significantly higher than the mean for those scoring below the pretest mean: .107 (n=44) and -.2986 (n=33), respectively; t=1.81, p=.076.

C. Attitude IV, Pleasant learning experience.

1. The correlation of Attitude IV with posttest overall achievement was significant at the .01 level: r=.320 (n=101).

   a. For females, this correlation was .356 and significant at the .01 level; for males, this correlation was .269 and significant at the ,10 level.
   b. For those scoring below the mean on the pretest, the correlation was significant at the .02 level: r=.383 (n=44).

2. The overall correlation of Attitude IV with Self-concept IV, Preference toward independent study and small discussion groups, was highly significant: r=.301 (n=101), p < .01.

   a. For females, the correlation was also significant at the .02 level: r=.331 (n=53)
   b. For males, the correlation was significant only at the .10 level: r=.258 (n=48)
   c. For those scoring above the mean on the pretest, the correlation was significant at the .01 level: r=.507 (n=33)
   d. For those scoring below the mean on the pretest, the correlation was significant at the .10 level: r=.270 (n=44)

3. The correlation of Attitude IV with Self-concept III, Efficiency of planning own study schedule, was significant only for those who scored below the mean on the pretest: r=.319 (n=44) p=.05.

D. Posttest Achievement.

The posttest achievement for males was significantly higher than the posttest achievement mean for females: 37.67 and 33.81 respectively, t=3.6, p .001.

E. Self-Concept V, Satisfaction of one's own academic performance.

The mean on Self-concept V was significantly higher for females than for males: .170 and -.179 respectively, t=-2.19, p=.031.

Discussion:

Assessment of student views on the fairness of the evaluation techniques used was made via factor III of the attitude instrument. While the overall correlation between Attitude III and posttest achievement was positive, it was only for the females that the relationship between these variables was significantly positive. The pretest achievement level of the students also was significantly related to Attitude III, (p=.01) with those above the pretest mean having higher attitude scores. This latter correlation might be explained by the fact that many weaker students verbally complained about how hard they had to work for even a B grade. They were not ready to accept evaluation of their own work against a criterion of mastery. Test fairness was found to be significantly related to a self-concept measure identified as satisfaction of one's own academic performance. The only other self-concept measure that was significantly correlated with Attitude III was identified as efficiency of planning own study schedule, but this was restricted to those who scored above the mean on the pretest.

These rather limited findings were not unexpected considering the facts that fairness in evaluation was not the strongest variable factored from the attitude instrument, and sample size of 101 was insufficient for definitive analysis and interpretation.

Assessment of student views on evaluation procedures encouraging learning was made via factor V of the attitude instrument. Only for those students who scored below the mean on the pretest was the correlation positive and significant between posttest achievement and Attitude V and between Attitude V and the self-concept measure of preference toward independent study and small discussion groups. This suggested that those who came into the course with greater deficiencies and who did relatively better on the posttest preferred the independent study approach more than did those who did relatively worse on the posttest.

This variable of evaluation encouraging learning was the weakest of the five factors, but in spite of that these few significant relationships supported the value of mastery learning and evaluation techniques for those who did not already possess at least average information about statistics. This conclusion must be interpreted cautiously, however, because the posttest achievement scores were negatively skewed, and in general those who did well on the pretest did better on the posttest and those that did poorly on the pretest did worse on the posttest. The latter scores were more spread out, i.e., had greater variance, so correlation of those scores with other variables would more likely be larger. In other words, random error for these subjects would not likely destroy whatever relationship might exist with other variables, whereas random error among those subjects with higher scores could very well have prevented any relationship that might have existed there from being measured accurately. This same interpretation could be applied to the correlation of Attitude III and posttest achievement for females cited above.

What was especially interesting were the correlations of the strongest factor of the attitude instrument, non-anxiety (Att. I), with the other variables. The overall relationship of Attitude I with posttest achievement was highly significant, but the correlation for females was significantly higher than the correlation for males. Though the males in general scored higher on Attitude I, it was the women whose scores correlated best with posttest achievement. As explained above, this

difference of correlation by sex might be a result of lack of variance on the posttest achievement variable for the men. (The mean for men on posttest achievement was significantly higher ($p < .001$) than the mean for women.)

Even though the achievement scores were concentrated near the high end of the scale giving a significantly negative skew to the distribution, they still correlated positively and significantly with attitude factors on non-anxiety, challenge, and pleasant learning experience, and the self-concept factor of general self-confidence and enjoyment. It would appear that individualized instruction is better for those who have self-confidence in their ability and who are not threatened by challenging learning experiences.

It also would seem that those who prefer individualized instruction and self-pacing are those who have a more favorable attitude toward that kind of learning experience; those who are satisfied with their own academic performance considered the testing and evaluation procedures more fair than did those who were not so satisfied.

Probably those who are most challenged and stimulated by a learning situation have varying degrees of anxiety. Therefore, it seems logical to expect that males who considered the learning experience challenging and who were generally self-confident performed better in achievement than did females. However, in terms of anxiety and general frustration, males' anxiety levels correlated with achievement significantly lower than for females. Females apparently achieve better in learning situations that are not anxiety producing.

The reason that men seemed to achieve higher scores than women would require further analysis of the groups' characteristics: age, academic program, goal, experience, etc. The fact that females expressed greater satisfaction in their own academic performance might suggest that their goals were not so high as males', as far as this particular course was concerned. What effect the sex of the teacher and the graduate teaching assistant had on the attitude of the students was not known.

It would be logical to expect that those who come into a course with more information about the content do better than those coming in with weaker backgrounds in statistics. The same is true for anxiety levels. It is also understandable why those who came into the course with little information about the subject would be more challenged by the course than would those who had considerable knowledge already about statistics.

As a result of this study the authors had no doubt that the self-concept variable was an important variable to consider. Self-confidence, preference toward learning style, and study habits all affect one's attitude toward what he is doing and of course the outcome of that learning. In the replication of this study during 1976 and 1977, (still in progress) the authors included more students and also collected the self-concept data before the beginning of the individualized instruction in statistics to give more reliable measures of self-concept before treatment (instruction).

References:

Aiken, L. R. Attitudes toward mathematics, REVIEW OF EDUCATIONAL RESEARCH, 1970, 40, 551-596.

Aiken, L. R. Research on attitudes toward mathematics, ARITHMETIC TEACHER, 1972, 19, 229-234.

Backman, N. Patterns of mental abilities: ethnic, socio-economic and sex differences. AMERICAN EDUCATIONAL RESEARCH JOURNAL, 1972, 9, 1-12.

Bernstein, A. Motivations in mathematics. SCHOOL SCIENCE AND MATHEMATICS, 1964, 64, 749-754.

Neale, D. C. The role of attitudes in learning mathematics. ARITHMETIC TEACHER, 1969, 16, 631-640.

Nord, S. B. Comparative Achievement and Attitude in Individualized and Class Instructional Settings. Unpublished Doctoral Dissertation, Northern Illinois University, August, 1974.

Webb, R. J. A study of the effects of anxiety and attitudes upon achievement in doctoral educational statistics. Unpublished Doctoral Dissertation, University of Southern Mississippi: University Microfilms, 1972, No. 72-9103.

NIU

Please put your name on the answer sheet.

The following list of adjectives and phrases may be used to describe any college class. Please consider each item according to your current attitude about this statistics course, Education 506. For every item make a separate and independent judgment and mark only on the answer sheet, using numbers 1-7. Do not mark in columns 0, 8 or 9.

Example:

Definitely	Moderately	Somewhat	Neutral	Somewhat	Moderately	Definitely
1	2	3	4	5	6	7

fun 1 X 3 4 5 6 7 not fun

This person has blackened the space in column 2. He feels that this statistics course is moderately fun.

Definitely 1	Moderately 2	Somewhat 3	Neutral 4	Somewhat 5	Moderately 6	Definitely 7

1.	anxiety producing	1	2	3	4	5	6	7	not anxiety producing
2.	interesting	1	2	3	4	5	6	7	uninteresting
3.	worthwhile evaluation techniques	1	2	3	4	5	6	7	worthless evaluation techniques
4.	not worrisome	1	2	3	4	5	6	7	worrisome
5.	motivating	1	2	3	4	5	6	7	not motivating
6.	testing techniques supportive to learning	1	2	3	4	5	6	7	testing techniques not supportive to learning
7.	disturbing	1	2	3	4	5	6	7	not disturbing
8.	unpleasant	1	2	3	4	5	6	7	pleasant
9.	constructive feedback from tests	1	2	3	4	5	6	7	not constructive feedback from tests
10.	threatening	1	2	3	4	5	6	7	not threatening
11.	stimulating	1	2	3	4	5	6	7	not stimulating
12.	Unfair examinations	1	2	3	4	5	6	7	fair examinations
13.	not emotionally upsetting	1	2	3	4	5	6	7	emotionally upsetting

NIU

	Definitely 1	Moderately 2	Somewhat 3	Neutral 4	Somewhat 5	Moderately 6	Definitely 7	
14.	challenging	1	2	3	4	5	6	7	not challenging
15.	evaluation process that encourages achievement	1	2	3	4	5	6	7	evaluation process that does not encourage achievement
16.	not thought-provoking	1	2	3	4	5	6	7	thought- provoking
17.	unreasonable number of tests	1	2	3	4	5	6	7	reasonable number of tests
18.	not distressing	1	2	3	4	5	6	7	distressing
19.	relevant	1	2	3	4	5	6	7	not relevant
20.	tests as positive motivators to learning	1	2	3	4	5	6	7	tests not positive motivators to learning

QUESTIONNAIRE

Please do not mark on this paper. Use the answer sheet to record your responses. Respond by marking the alternative which most accurately reflects your present real feelings toward the statement.

A = Strongly disagree B = Disagree C = Neutral D = Agree E = Strongly Agree

1. I have confidence in my academic ability.
2. I prefer independent study over teacher-structured courses.
3. I gain a great deal of satisfaction from my academic work.
4. I like classes better when the instructor makes a detailed study schedule for the students.
5. I prefer small discussion groups to lectures.
6. I usually receive grades appropriate to my ability and effort in the class.
7. I can usually work out an efficient study schedule for myself.
8. I often feel uncomfortable in the classroom situation.
9. I tend to put off studying until just before an exam.
10. I believe my ability as a student is not fully recognized by others.
11. I prefer the teacher to spell out exactly what is required for a passing grade.
12. I really enjoy the academic atmosphere.
13. I seldom get behind in a class.
14. I often get discouraged by my classroom performance.
15. I prefer to have the teacher do the talking and the students to do the listening.
16. I do not think my coursework has been personally rewarding.
17. I have a reputation for being a good student.
18. I prefer considerable direction in class assignments.

NIU